

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A process for producing crosslinked, singulated pulp fibers comprising:

introducing a wet pulp and air into a jet drier;

treating said wet pulp with a crosslinker;

thereafter drying said pulp in said jet drier to form singulated pulp fibers; and

removing said pulp from said jet drier and separating said pulp fibers from said air.

2. The process of Claim 1, wherein said crosslinker is selected from the group consisting of polyacrylic acid, glyoxal, malic acid, and tartaric acid.

3. The process of Claim 1, wherein said treatment substance is mixed with said wet pulp before introducing said wet pulp into said drier.

4. The process of Claim 1, wherein said wet pulp is at least partially dewatered prior to introducing said pulp into said drier.

5. The process of Claim 1, wherein said wet pulp is further treated with a treatment substance to reduce the knot content of said pulp fibers, selected from the group consisting of a surfactant and a mineral particulate.

6. The process of Claim 5, wherein said treatment substance is a mineral particulate.

7. The process of Claim 5, wherein said treatment substance is a surfactant.

8. The process of Claim 1, wherein said wet pulp is further treated with a substance selected from the group consisting of a hydrophobic material, a superplasticizer, a foam, surfactant caused to and a water reducing agent.

9. The process of Claim 1, wherein the knot count of said pulp fibers is less than 15%.

10. The process of Claim 9, wherein the knot count of said pulp fibers is less than 10%.

11. The process of Claim 9, wherein the knot count of said pulp fibers is less than 5%.

12. The process of Claim 9, wherein the knot count of said fibers is less than 2%.

13. The process of Claim 5, wherein said fibers have a knot count less than 15%.

14. The process of Claim 13, wherein said fibers have a knot count less than 10%.

15. The process of Claim 13, wherein said fibers have a knot count less than 5%.

16. The process of Claim 13, wherein said fibers have a knot count less than 2%.

17. The process of Claim 1, wherein the knots count is less than or equal to 5%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 15%.

18. The process of Claim 1, wherein the knots count is less than or equal to 5%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 13%.

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19. The process of Claim 1, wherein the knots count is less than or equal to 5%, the accepts are greater than or equal to 85%, and the fines are less than or equal to 15%.

20. The process of Claim 1, wherein the knots count is less than or equal to 2%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 15%.

21. The process of Claim 6, wherein the knots are less than or equal to 2%, the accepts are greater than or equal to 77%, and the fines are less than or equal to 21%.

22. The process of Claim 7, wherein the knots are less than or equal to 5%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 15%.

23. The process of Claim 7, wherein the knots count is less than or equal to 5%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 13%.

24. The process of Claim 7, wherein the knots count is less than or equal to 5%, the accepts are greater than or equal to 85%, and the fines are less than or equal to 15%.

25. The process of Claim 7, wherein the knots count is less than or equal to 2%, the accepts are greater than or equal to 80%, and the fines are less than or equal to 15%.

26. The process of Claim 1, wherein said supply pulp has a consistency of from 0.01% to 10% before introduction into said jet drier.

27. The process of Claim 26, wherein said supply pulp has a consistency of from 3% to 10% before introduction into said drier.

28. The process of Claim 1, wherein said singulated pulp is dried to a moisture content of less than 2 percent to 10 percent by weight.

~~29.~~ A process for producing singulated pulp fibers comprising:
introducing wet pulp containing a crosslinker and air into a jet drier through a rotary airlock, said rotary airlock having vanes and a housing, the end of said vanes being spaced from said housing by a distance sufficient to prevent wet fibers from clogging said airlock.

30. The process of Claim 29, wherein said gap between said vane end and said housing is in the range of .010 to .050 inches.

31. The process of Claim 29, wherein said vanes shear fiber clumps as they enter said housing to prevent clogging said airlock.

~~32.~~ A process for producing singulated pulp fibers comprising:
introducing a wet pulp containing a crosslinker and air into a jet drier,
drying said wet pulp in said jet drier to form crosslinked, singulated pulp fibers;

withdrawing said fibers from said jet drier in an air stream at a velocity sufficient to prevent said fibers from knotting; and
separating said pulp fibers from said air stream.

33. The process of Claim 32, wherein said pulp fibers are withdrawn from said drier through a conduit, said conduit being sized and said air stream being maintained at a velocity sufficient to maintain fibers suspended in said air stream in said conduit.

34. The process of Claim 32, further comprising curing said pulp fibers after said pulp fibers are separated from said air stream.

35. The process of Claim 32, further comprising flash drying said pulp fibers after said pulp fibers are separated from said airstream; and curing the flash dried pulp fibers.

36. A process for producing singulated pulp fibers comprising:
introducing wet pulp containing a crosslinker and air into a jet drier;
drying said wet pulp in said jet drier to form singulated pulp fibers; and
withdrawing said pulp fibers from an outlet from said jet drier under a partial vacuum.

37. The process of Claim 36, wherein said vacuum is applied to a plenum, the process further comprising:

positioning a head box at the outlet;

positioning a movable screen between said plenum and said head box on which said pulp fibers are deposited, said head box and said plenum being in sealing contact with said screen; and

moving said screen past said head box to remove pulp fibers from said head box.

38. The process of Claim 37, wherein said fibers emerge from said head box at an outlet side as said screen is moved, the process further comprising:

positioning a second plenum under said screen adjacent said outlet side; and

drawing a partial vacuum in said second plenum to hold said fibers on said screen as they emerge from said head box.

39. Singulated pulp fibers produced by the process as in Claim 1.